Technics

Stereo Cassette Deck

RS-BR465

OPERATING INSTRUCTIONS

Dear Stereo Fan

We thank you for selecting this product and welcome you to the growing family of satisfied Technics product owners around the world.

We feel certain you will get maximum enjoyment from this new addition to your home.

Please read these operating instructions carefully, and be sure to keep them handy for convenient reference.

Contents

Suggestions for Safety

■ **Use a standard AC wall outlet**
1. **Use from an AC power source of high voltage, such as that used for an air conditioner, is very dangerous.**
   A fire might be caused by such a connection.
2. **A DC power source cannot be used.**
   Be sure to check the power source carefully, especially on a ship or other place where DC is used.

■ **Grasp the plug when disconnecting the power supply cord**
1. **Wet hands are dangerous.**
   A dangerous electric shock may result if the plug is touched by wet hands.
2. **Never place heavy items on top of the power supply cord, nor force it to bend sharply.**

■ **Place the unit where it will be well ventilated**
Place this unit at least 10 cm (4") away from wall surfaces, etc.

■ **Avoid places such as the following:**
In direct sunlight or in other places where the temperature is high.
In places where there is excessive vibration or humidity.
Such conditions might damage the cabinet and/or other component parts and thereby shorten the unit's service life.

■ **Be sure to place the unit on a flat, level surface**
If the surface is inclined, a malfunction may result.

■ **Never attempt to repair nor reconstruct this unit**
A serious electric shock might occur if this unit is repaired, disassembled or reconstructed by unauthorized persons, or if the internal parts are accidentally touched.

■ **Take particular care if children are present**
Never permit children to put anything, especially metal, inside this unit. A serious electric shock or malfunction could occur if articles such as coins, needles, screwdrivers, etc. are inserted through the ventilation holes, etc. of this unit.

■ **If water is spilled on the unit**
Be extremely careful if water is spilled on the unit, because a fire or serious electric shock might occur. Immediately disconnect the power cord plug, and consult with your dealer.

■ **Avoid spray-type insecticides**
Insecticides might cause cracks or "cloudiness" in the cabinet and plastic parts of this unit. The gas used in such sprays might, moreover, be ignited suddenly.

■ **Never use alcohol or paint thinner**
These and similar chemicals should never be used, because they might cause flaking or cloudiness of the cabinet finish.

■ **Disconnect the power supply cord if the unit will not be used for a long time**
If the unit is left for a long time with the power ON, this not only will shorten its useful operation life, but also may cause other trouble.

■ **If trouble occurs**
If, during operation, the sound is interrupted or indicators no longer illuminate, or if an abnormal odour or smoke is detected, immediately disconnect the power cord plug, and contact with your dealer or an Authorized Service Center.

Accessories

●Stereo connection cables 2	●L-type cables 2	●AC power supply cord 1	●Power plug adaptor ...... 1 (For areas except Australia)

Configuration of the AC power supply cord differs according to area.

Before Use

Be sure to disconnect the mains cord before adjusting the voltage selector.
Use a minus (−) screwdriver to set the voltage selector (on the rear panel) to the voltage setting for the area in which the unit will be used.
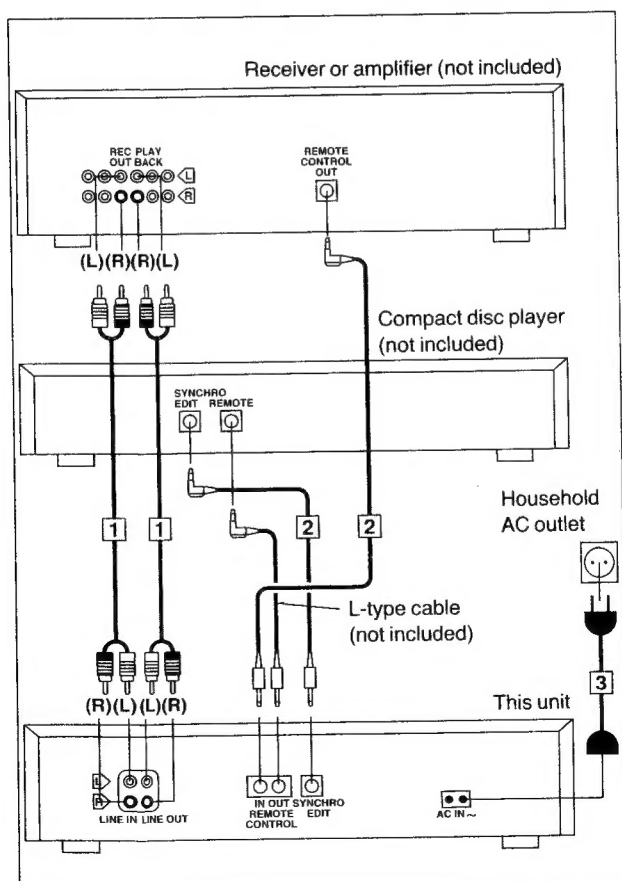
(If the power supply in your area is 117 V or 120 V, set to the "127 V" position.)
Note that this unit will be seriously damaged if this setting is not made correctly. (There is no voltage selector for some countries; the correct voltage is already set.)

Connections

Make connections in the numbered sequence by using the included cables.

1. **Connect the stereo connection cables.**

2. **Connect the L-type cables.**

3. **Connect the AC power supply cord.**

The illustration at the left shows an example of connections made when this unit is combined with a Technics hi-fi component system, and shows only the connections to be made to and from this unit in that combination.
Refer to the illustration together with the instructions provided below.

"REMOTE CONTROL IN" terminal
Make a connection from this terminal to the control terminal for a cassette deck with a Technics receiver or a Technics amplifier. (For detailed information, refer to the operating instructions of the Technics receiver or the Technics amplifier.)

"REMOTE CONTROL OUT" terminal
Make a connection from this terminal to the "REMOTE INPUT" terminal of a Technics graphic equalizer or to the "REMOTE" terminal of a Technics compact disc player.
(For detailed information, refer to the operating instructions of the Technics graphic equalizer or the Technics compact disc player.)

"SYNCHRO EDIT" terminal
Make a connection from this terminal to a terminal that has the synchro-edit function of a Technics compact disc player.
See page 13. (Contact your dealer for details.)

AC power supply cord (3)
The configuration of the AC outlet and AC power supply cord differs according to area.

For areas except Australia
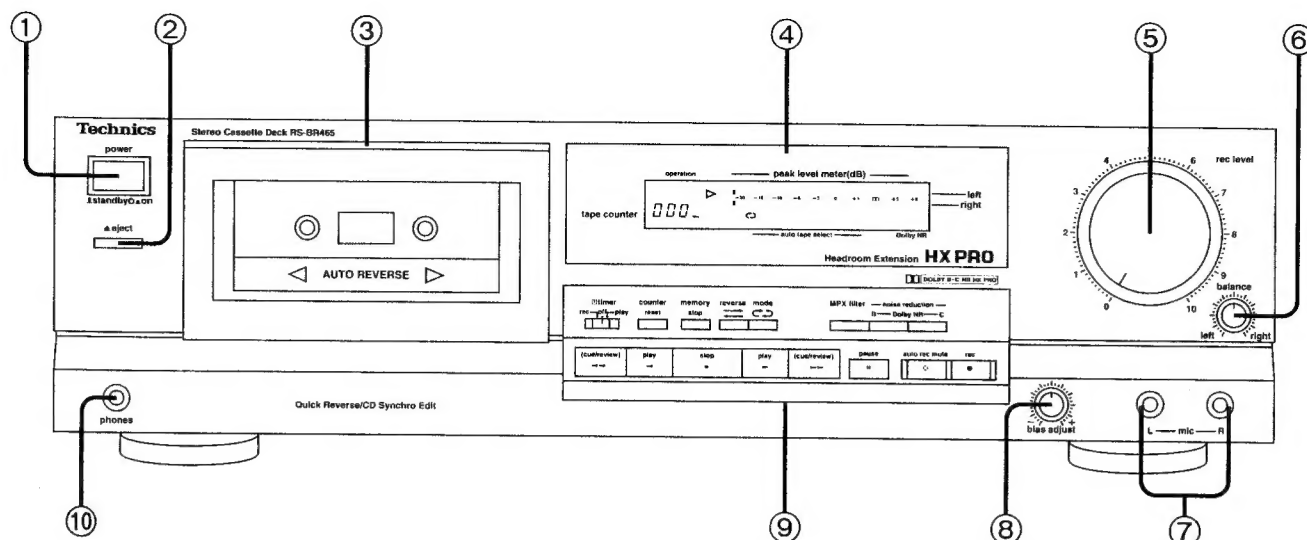If the power plug will not fit your socket, use the power plug adaptor (included).

Placements hints
If this unit is placed near a receiver or a tuner, a "hum" noise may be heard during tape playback, recording, or AM reception of the receiver or the tuner.
If this occurs, leave as much space as possible between the units, or place them where there is the least amount of "hum".

Receiver or amplifier (not included)

REC PLAY OUT BACK

REMOTE CONTROL OUT

(L)(R)(R)(L)

Compact disc player (not included)

SYNCHRO EDIT   REMOTE

Household AC outlet

L-type cable (not included)

(R)(L) (L)(R)

This unit

LINE IN LINE OUT

IN OUT SYNCHRO
REMOTE   EDIT
CONTROL

AC IN ∼

Front Panel Controls and Functions

Control Section

① **Power "standby ⏻ /on" switch**
(power/▮ standby ⏻ ▬ on)
This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the standby ⏻ position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

② **Eject button (▲ eject)**
This buttons is used to open the cassette holder.

③ **Cassette holder**

④ **Display section**
(See "Display Section" on page 6.)

⑤ **Recording-level control (rec level)**
This control is used to regulate the recording level.

⑥ **Recording-balance control (balance)**
This control is used to balance the left and right sound levels during recording.

⑦ **Microphone jacks (mic)**

⑧ **Bias-adjustment control (bias adjust)**
The frequency response for each tape type can be equalized by using this control.

⑨ **Operation section**
(See "Operation Section" on page 5.)

⑩ **Headphones jack (phones)**

Operation Section

⑪ Timer switch (⏲ timer)

This switch is used to automatically begin a tape recording or tape playback at a certain time, selected by a timer (not included). (Refer to page 15.)

⑫ Counter reset button (counter reset)

This buttons is used to reset the tape counter indication to "000".

⑬ Memory-stop button (memory stop)

This button is used to rewind the tape to the preset "000" point when the fast-forward or rewind button is pressed. (Refer to pages 9 and 12.)

⑭ Reverse-mode selectors (reverse mode)

These selectors are used for selection of the reverse mode (for either playback or recording). (Refer to pages 9 and 11.)

⑮ Multiplex filter switch (MPX filter)

This prevents the Dolby circuit from operating in error when FM stereo broadcasts are recorded using the noise reduction function. (Refer to page 14.)

⑯ Dolby noise-reduction buttons (noise reduction)

These buttons are used to reduce the hissing noise heard from the tape. This unit is provided with both the Dolby B-type and Dolby C-type noise-reduction systems.

⑰ Record button (rec/●)

This button is used to set the deck to the recording stand-by mode.

⑱ Automatic-record-muting button (auto rec mute/◯)

This button is used to make a silent interval on the tape while recording is in progress.

⑲ Pause button (pause/❙❙)

The button is used to temporarily stop playback or recording.

⑳ Fast-forward/cue, rewind/review buttons (cue/review/▶▶/◀◀)

These buttons are used to advance or rewind the tape. During playback these buttons are used to cue or review while listening to the contents at high speed. (Refer to page 8.)

㉑ Forward-side playback button (play/▶)

This button is used to start the playback or recording of side "A" of the cassette.
(The tape will then begin moving in the left-to-right direction.)
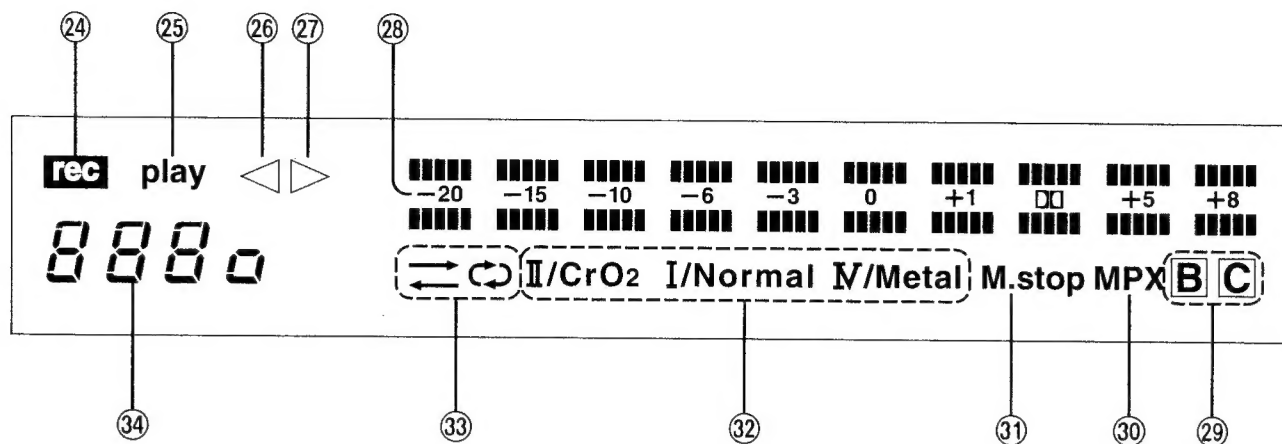
㉒ Stop button (stop/■)

This button is used to stop the tape movement.

㉓ Reverse-side playback button (play/◀)

This button is used to start the playback or recording of side "B" of the cassette.
(The tape will then begin moving in the right-to-left direction.)
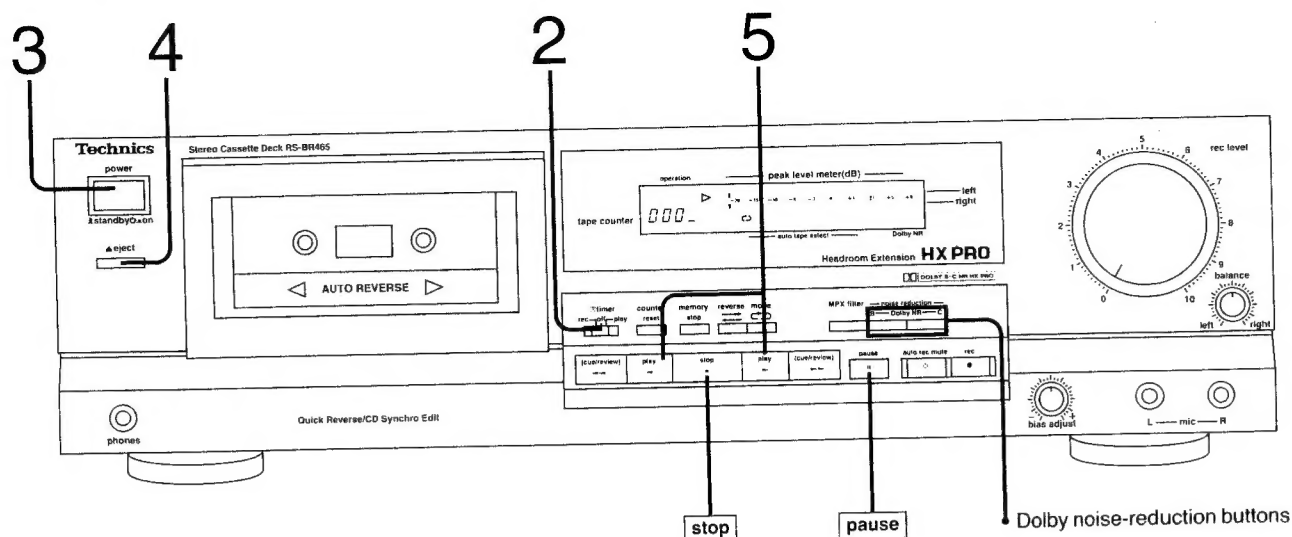
5

Front Panel Controls and Functions

(continued)

Display Section

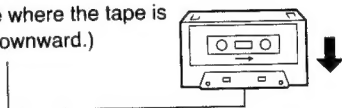### ㉔ Recording indicator (rec)
Illuminates to indicate that this unit is in the recording stand-by or recording mode.

㉕ Playback indicator (play)
When this indicator illuminates steadily, it indicates that this unit is in the playback or recording mode. When it flashes continually, it indicates that this unit is in the pause mode or the recording stand-by mode.

㉖ Reverse-side indicator (◁)
Illuminates to indicate that side "B" of the tape is being used.

㉗ Forward-side indicator (▷)
Illuminates to indicate that side "A" of the tape is being used.

㉘ Input level meter
During playback, this meter indicates the level of the recorded sound.
During recording, it indicates the level being recorded, adjusted by the recording-level control.

㉙ Dolby noise-reduction indicators (B, C)
One of these indicators illuminates to show the type of Dolby noise-reduction system selected.

㉚ Multiplex filter indicator (MPX)
Illuminates to indicate that the multiplex filter is set to "on". (See page 14.)

㉛ Memory-stop indicator (M.stop)
This indicator illuminates to indicate that this tape deck is in the memory stop mode.

㉜ Tape-select indicators
The type of tape being used will be automatically detected. The corresponding indicator illuminates to show the tape type.

㉝ Reverse-mode indicators (⇄, ↻)
One of these indicators illuminates to show which type of the reverse mode was selected.

㉞ Tape counter
Indicates the amount of tape movement.

Playback

```
3    4                      2        5

Technics  Stereo Cassette Deck RS-BR465

      power                          operation    peak level meter(dB)              left
                                                                                    right
     standbyθ・on                    tape counter  □□□_  ◇         auto tape select    Dolby NR
                                                                                              rec level
     ▲ eject                                         Headroom Extension HX PRO
                           AUTO REVERSE
                                                    timer  counter memory reverse mode  MPX filter  noise reduction
      phones    Quick Reverse/CD Synchro Edit       rec off play reset stop              B  Dolby NR  C
                                                    (cue/review) play  stop  play (cue/review) pause auto rec mute rec
                                                                                                bias adjust  L  mic  R
```

stop   pause   Dolby noise-reduction buttons

Normal play

1 Set the power switch of the amplifier to ON, and select its "tape" input source.

2 Set the timer switch to OFF.

3 Set the power switch to ON.

4 Press the eject button, and then insert the cassette tape.
(The part of the cassette where the tape is exposed should face downward.)

5 Press the playback button.
play/▶: Plays side "A" (side facing outward)
play/◀: Plays side "B"
(The playback indicator will illuminate, and playback will begin.)

■ To temporarily stop playback
Press the pause button.
(The playback indicator will begin flashing.)
To resume playback, press the playback button corresponding to the side of the tape being played.
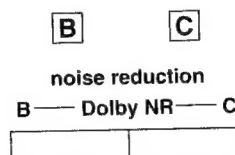
■ To stop playback
Press the stop button.
(The playback indicator will switch OFF.)

Note:
Do not press the eject button while the tape is moving; doing so might cause a malfunction or damage the tape.

■ To listen to a Dolby NR recorded tape.

```
Dolby noise-reduction buttons and indicators

        B        C

       noise reduction
   B —— Dolby NR —— C
```
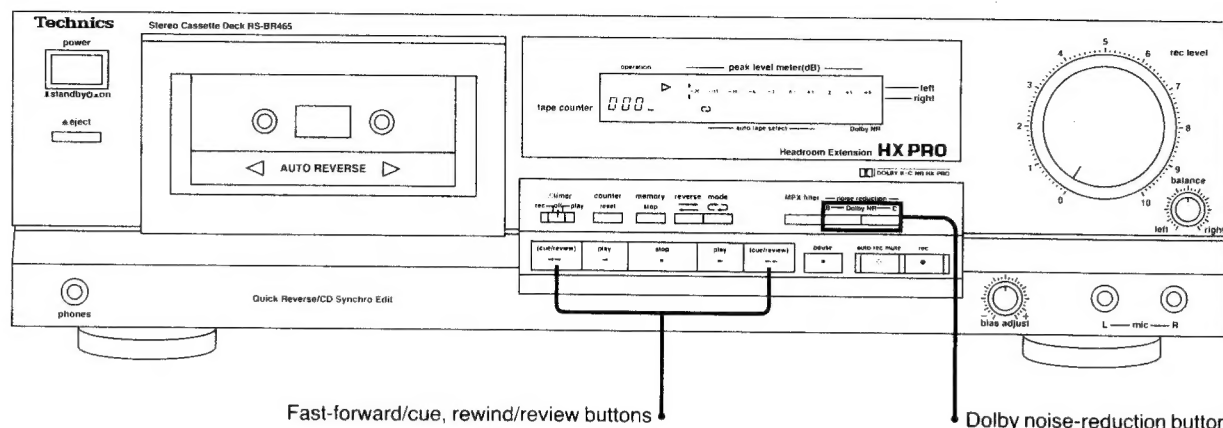
Press the button corresponding to the type of Dolby noise-reduction that was activated during recording.
(The Dolby noise-reduction indicator will then illuminate.)

●To switch off the noise-reduction system, press the Dolby noise-reduction button corresponding to the Dolby noise-reduction indicator that is illuminated. (The indicator will then switch OFF.)

Playback (continued)

Fast-forward/cue, rewind/review buttons   Dolby noise-reduction buttons

■ About the Dolby noise-reduction recording/playback system

The Dolby noise-reduction system is a system designed to effectively reduce the annoying high-frequency "hissing" noise typically heard from tapes if this system is not used. During recording, the system functions to increase the level of the high-frequency part of the sound, and then, during playback, that same portion is weakened and returned to the previous level. This unit includes two types of Dolby noise-reduction systems, the Dolby B NR-type and C NR-type, and Dolby HX PRO headroom extension system.

Dolby B-type noise-reduction system
Noise is reduced to about one-third.
Use this system when playing back tapes recorded by the Dolby B noise-reduction system, such as prerecorded music tapes, etc.

Dolby C-type noise-reduction system
Noise is reduced to about one-tenth.
Use this system for the recording and playback of sound sources that have a wide dynamic range and good tone quality, such as FM broadcasts of live performances, etc., and for playing back such tapes.

Dolby HX PRO headroom extension system
By functioning to improve the maximum output level of the tape's high-frequency range, this system permits recordings without a drop in the level of the sound source's high-frequency range. In addition, by using the system in parallel with this unit's noise-reduction system, recording and playback with a greatly extended dynamic range is possible.

Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
"DOLBY", the double-D symbol □□ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

To locate and play a certain tune

■ To search for a desired part of the tape while listening to tape sounds at high speed
This function is convenient for locating the beginning of a tune (non-recorded portion) since sound monitoring is possible while searching.

Press and hold the rewind/review, or fast-forward/cue button during playback. Normal playback will resume from the point where the button is released.
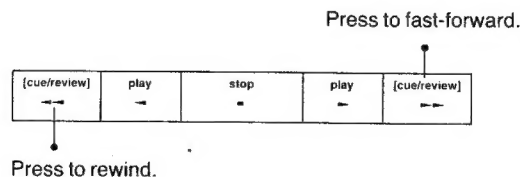(The playback indicator will begin quick flashing.)

Note:
The cue/review function causes sounds to become high pitched. During this function, be sure to decrease the amplifier's volume to prevent damage to the speaker system's tweeters.

■ To fast-forward or rewind the tape
While in the stop mode, press the appropriate button according to the following figures.

If side "A" is being played (forward) (▶):

Press to fast-forward.

[cue/review]	play	stop	play	[cue/review]
◄◄	◄	■	►	►►

Press to rewind.

If side "B" is being played (reverse) (◄):

Press to rewind.

[cue/review]	play	stop	play	[cue/review]
◄◄	◄	■	►	►►

Press to fast-forward.

3 1 Reverse-mode selectors

Technics Stereo Cassette Deck RS-BR465

power

standby on

eject

◁ AUTO REVERSE ▷

operation — peak level meter(dB) — left right

tape counter

auto tape select Dolby NR

Headroom Extension **HX PRO**

DOLBY B-C NR HX PRO

timer counter memory reverse mode

rec play reset stop

MPX filter — noise reduction —

B — Dolby NR — C

[cue/review] play stop play [cue/review] pause auto rec mute rec

rec level

balance

left right

bias adjust L — mic — R

phones Quick Reverse/CD Synchro Edit

4 2·6 5

Various playback functions

Reverse-mode selectors and indicators

reverse mode

The reverse-mode selectors are used to select either of two different playback modes.

⇌ **Select this mode to play back only one side of a cassette tape.**
(The "⇌" reverse-mode indicator will then illuminate.)
When the playback of the selected side has finished, tape movement will stop automatically.

↻ **Select this mode to play back both sides of a cassette tape continuously.**
(The "↻" reverse-mode indicator will then illuminate.)
This playback will continue eight times, unless the stop button is pressed.
(One "time" is counted when side "B" of the tape finishes playback. If playback is started from side "B", side "A" will play only seven times.)

"Memory stop" function

"Memory stop" is a function which can memorize the designated point for playback. This is convenient to repeat playback from the desired point.

■ To set the "memory stop" point

1 Press the memory-stop button.
(The memory stop indicator will illuminate.)

2 Press the playback button.

3 Press the counter-reset button at the desired point on the tape.
The counter will be reset to "000", and the start point will be set.

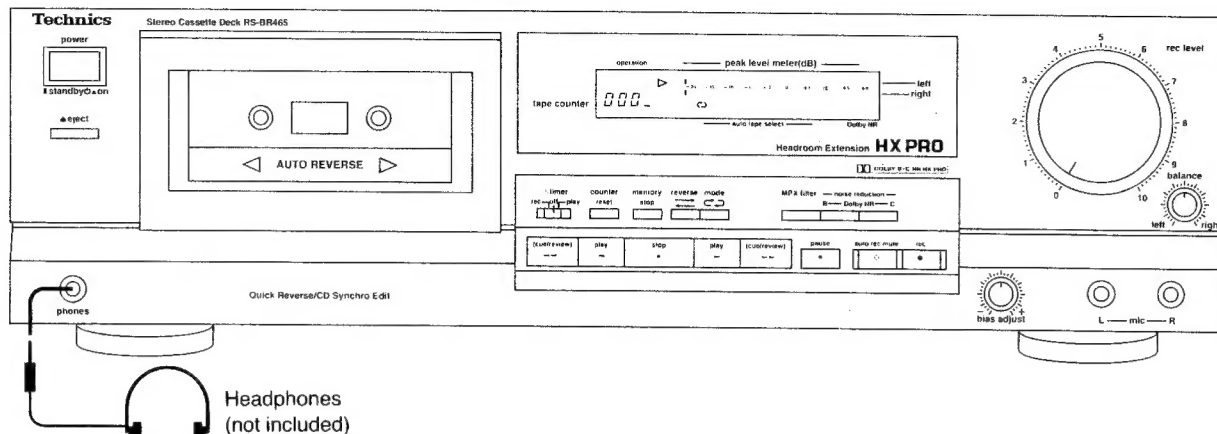### ■ To begin playback from the "memory stop" point

4 Press the stop button.

5 Press either the fast-forward or rewind buttons to rewind to "memory stop" point.
The tape will be rewound to the "memory stop" point, and then will be automatically stopped.

6 Press the playback button.
The playback will begin from the "memory stop" point.

●To cancel the "memory stop" function, press the memory-stop button once again.
(The memory-stop indicator will be switched OFF.)

Note:
There may be a slight difference (maximum +4 seconds) between the point where the tape counter was reset and the point where the tape actually stops during rewind.

Playback (continued)

Headphones
(not included)

To listen through headphones

Connect headphones (not included) to the head-phones jack.

Plug type: 6 mm phone plug, stereo type.
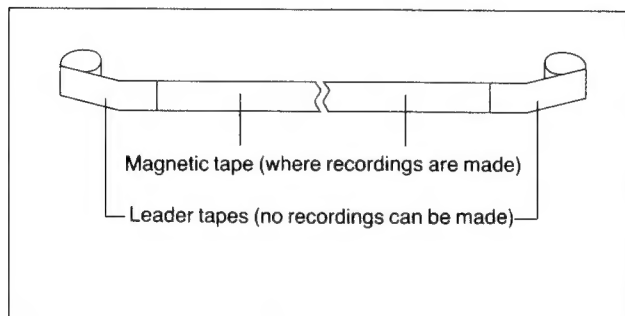
Note:
Avoid listening for prolonged period of time to prevent hearing damage.

Automatic-tape-select function

The unit is equipped with the automatic-tape-select feature; it automatically detects the type of tape being used, and then makes the suitable adjustments accordingly of the bias and equalization. (The tape-select indicator will then illuminate.)
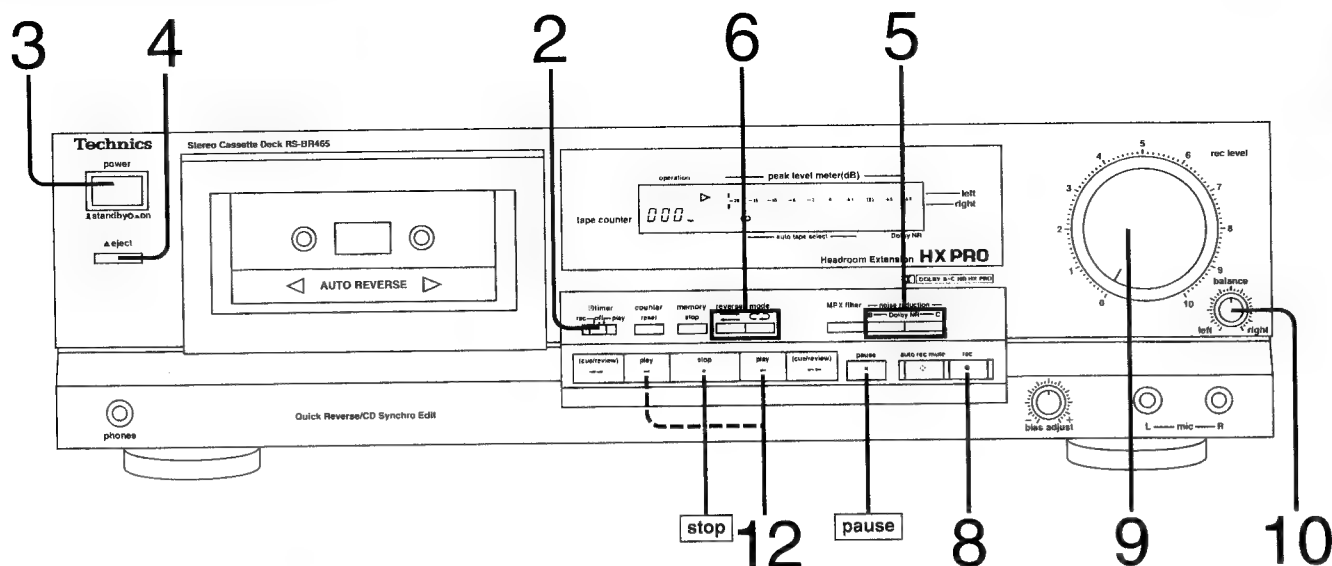
Quick-reverse function

This is a function by which the unit detects the leader tape (the transparent tape at both ends of the magnetic tape) and then automatically reverses (in about one second) the direction of the tape movement during playback (or recording).

Magnetic tape (where recordings are made)

Leader tapes (no recordings can be made)

- In order to avoid an operational error at the beginning of the tape, this function is not effective until about 15 seconds after playback (or recording) first starts.
- This function does not operate for tapes that do not have leader tapes.
- This function may not function correctly:
  If the leader tapes are colored.
  If there is dirt or dust on the tape.
  If the magnetic part of the tape is thin.
  If a strong light (direct sunlight, a spotlight, etc.) is shining into the cassette holder.
  When the unit is subjected to a strong impact.
- When the quick-reverse function is not activated, the tape's direction of movement will reverse when the tape reaches its end.

Recording

Technics Stereo Cassette Deck RS-BR465

AUTO REVERSE

Quick Reverse/CD Synchro Edit

Headroom Extension **HX PRO**

Normal recording

1 **Set the power switch of the amplifier to ON, and select the input source.**

2 **Set the timer switch to OFF.**

3 **Set the power switch to ON.**

4 **Press the eject button, and then insert the cassette to be used for recording.**
(The part of the cassette where the tape is exposed should face downward.)

5 **Press the button corresponding to the Dolby noise-reduction system (B or C) to be used.**
[The Dolby noise-reduction ("B" or "C") indicator will illuminate.]
If no Dolby noise-reduction system is to be used, press the Dolby noise-reduction button corresponding to the Dolby noise-reduction indicator that is illuminated. (The indicator will then switch OFF.)

6 **Select the appropriate reverse mode.**
[A reverse-mode indicator (" ⇄ " or " ⟳ ") will illuminate.]
⇄ **Select this mode to record on one side only.**
The recording will stop at the end of one side of the tape depending which side was selected.
⟳ **Select this mode to record on both sides.**
The recording will be made on side "B" after recording on side "A"; the tape will stop at the end of side "B".

7 **The sound source to be recorded should be played before the recording is started in order to adjust the recording level.**

8 **Press the record button.**
(The recording indicator will illuminate and the playback indicator will flash continuously; the unit will be in the recording stand-by mode.)

9 **Adjust the recording level.**
While watching the level on the meters, adjust the "rec level" control so that the peak indication is as high as possible, without exceeding the indication noted in the chart below.

	Normal tape CrO₂ tape	Metal tape
●Dolby NR B●C ●NR off	☐☐(+3)	+5

10 **Adjust the left/right recording balance.**

11 **Start the playback source from the beginning.**

12 **Press the playback button.**
●If only one side of the tape (reverse mode position: ⇄) is to be recorded, press the playback button that corresponds to that side.
●To record on both sides of the tape (reverse mode position: ⟳), press the "A" side playback button (▶).
(The playback indicator will illuminate steadily, and the recording will begin.)

■ **To temporarily stop recording**
Press the pause button.
(The playback indicator will begin flashing.)
To resume recording, press the playback button.

■ **To stop recording**
Press the stop button.

Note:
If this unit is used in combination with a Technics compact disc player that has a synchro-edit terminal, switch OFF the compact disc edit indicator on the compact disc player (by pressing the stop button on the compact disc player).

Convenient Features for Recording

Recording after "memory stop"

If the recording start position is memorized at times such as those listed below, the tape can be automatically rewound to that position and recording (or playback) can commence.
●When recording is to be conducted again
●When the bias has been adjusted (see page 14).
●When a recording is to be played back

1 Press the memory-stop button.
(The memory-stop indicator will illuminate.)

2 Press the counter-reset button.
(The counter will be reset to "000" and the start point will be set.)

3 Follow steps 5 through 12 in "Recording" to begin the recording.
(Refer to page 11.)

4 To begin the recording again from the "memory stop" point, press either the fast-forward or rewind buttons to rewind to "memory stop" point.
(Refer to page 9.)
(The tape will be rewound to the set position where the counter was reset, and the tape will automatically stop.)

5 Begin the recording once again.
(Follow steps 8, 11-12 in "Recording".)

●To cancel the "memory stop" operation, press the memory-stop button once again.
(The memory-stop indicator will be switched OFF.)

Note:
There may be a slight difference (maximum +4 seconds) between the point where the tape counter was reset and the point where the tape actually stops during rewind.

To make microphone recordings

You can make your own unique original tapes by using microphones (not included) to record your instrumental or vocal performances.

1 Connect the microphones to the microphones jack(s).
(A microphone connected to the "L" jack will record sounds on the tape's left channel, and a microphones connected to the "R" jack will record sounds on the right channel.)

2 Begin the recording by following the steps described in the "Recording" section.
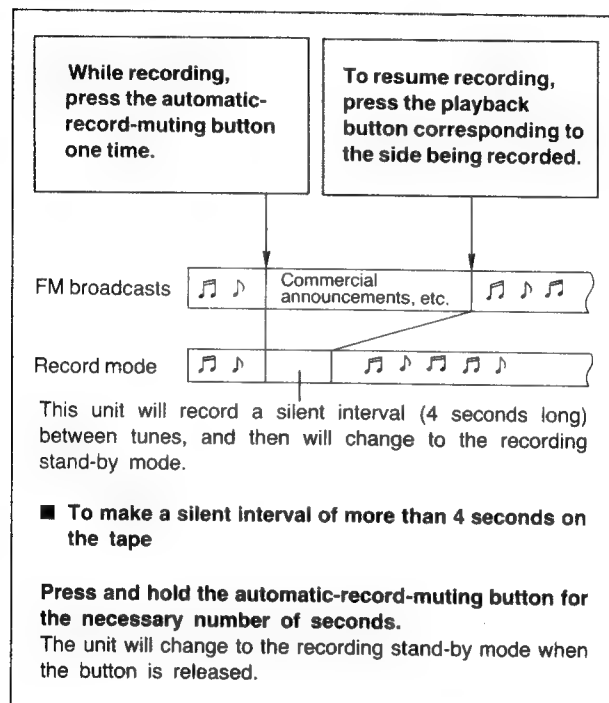
Note:
Be sure to disconnect the microphones when recording from a source (such as a tuner, turntable, etc.) connected to the line input terminals.
If the microphones are not disconnected, the source connected to the line input terminals will not be recorded.

Automatic-record-muting function

By simply pressing the automatic-record-muting button while a recording is being made, a silent interval (which is necessary for locating the beginning of a tune during playback) can be made.

This feature is also convenient for omitting unwanted material such as commercial messages, etc. during recording.

This unit will record a silent interval (4 seconds long) between tunes, and then will change to the recording stand-by mode.

■ **To make a silent interval of more than 4 seconds on the tape**

Press and hold the automatic-record-muting button for the necessary number of seconds.
The unit will change to the recording stand-by mode when the button is released.

To erase recorded sounds

When new recordings are made on a recorded tape, all sounds recorded on that portion of the tape are automatically erased. To erase a tape without making a new recording, follow the steps below.

1 Insert the pre-recorded cassette into the cassette holder.

2 Set the recording-level controls to "0".

3 Set the reverse-mode selector to either one-side only (⇌) or both sides (↻), depending on whether only one side is to be erased or both.

4 Press the Dolby noise-reduction button corresponding to the Dolby noise-reduction indicator that is illuminated.
(The indicator will then switch OFF.)

5 Press the record button.

6 Press the playback button corresponding to the side to be erased.

Compact disc synchro-edit-recording

When a Technics compact disc player with the compact disc synchro-edit function is used in combination with this unit, recordings can be made on side "A" and side "B" of the tape, without interruptions of tracks, in conjunction with the tape length.

■ Procedure for this unit

1 Follow steps 1 through 10 in the section concerning recording.
(Refer to page 11.)

■ Procedure for the compact disc player

2 Press the stop button.
(Disc play will stop.)

3 Press the edit-tape-length button and specify the length of the tape to be used.
The tracks to be recorded to side "A" of the tape and those to be recorded to side "B" will then be automatically selected according to the tape's length.

4 Press the play button.
The recording will start at the same time that play starts at the compact disc player.

For more detailed information, refer to the operating instructions of the applicable Technics compact disc player to be used.

Note:
Be sure to connect the stereo connection cable of a Technics compact disc player with the amplifier when using the synchro edit function even if the optical cable has been connected.

Notes:
● Recordings cannot be made on the leader tape (attached to each end of recording tape), so advance the tape slightly from its end before starting a recording. Also check to be sure that side A (▷) indicator is illuminated.
● If the CD program contents to be recorded on side "A" of the tape are shorter than the actual tape length, this unit will continue to record until it reaches the end of side "A", while the compact disc player switches to the pause mode. At the end of side "A", the unit automatically switches to side "B" and after few seconds the compact disc player will resume play.
● To stop a synchro-edit recording from the compact disc player, be sure to press the stop button on the compact disc player twice and then press the stop button on this unit.
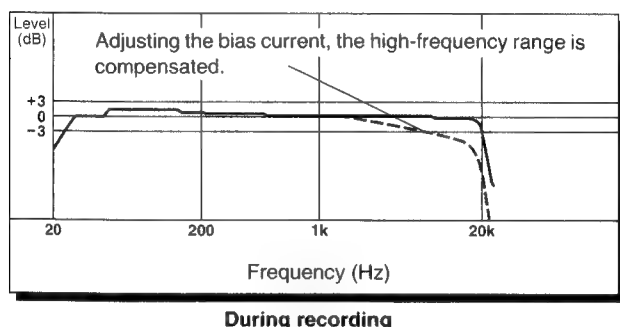
Recording with High Tone Quality

Bias adjustment function

When recordings are made with the same recording level into same type (but different brands) of tape, (regular or "normal" tape, for example), you may notice that the reproduced high-frequency sound is different from one tape to an other.

The reason that such differences may be noticed is because there are differences in the frequency response (particularly in the treble range) between cassette tapes of the various manufacturers. Although a noise-reduction system is used the recording and playback processes at the same recording level, a difference of the frequency response will result in the processes of recording. Such a problem cannot be corrected in conventional recording system.

In order to overcome this problem, this unit includes a bias-adjustment control (for compensation of the frequency response) so that the most appropriate recording can be made.

During recording

1 Make a recording as explained in steps 1 through 12 of "Recording".
(Refer to page 11.)

2 While the switching back and forth between the original sound source and the recorded source by using the input selector on the system amplifier, adjust the bias-adjustment control so that the treble tone quality is the same.
It may be helpful, as a reference, to adjust the bias during between-station noise heard on the FM band. The adjustment will be made more precisely by listening through headphones. Connect the headphones to the headphones jack of the amplifier.

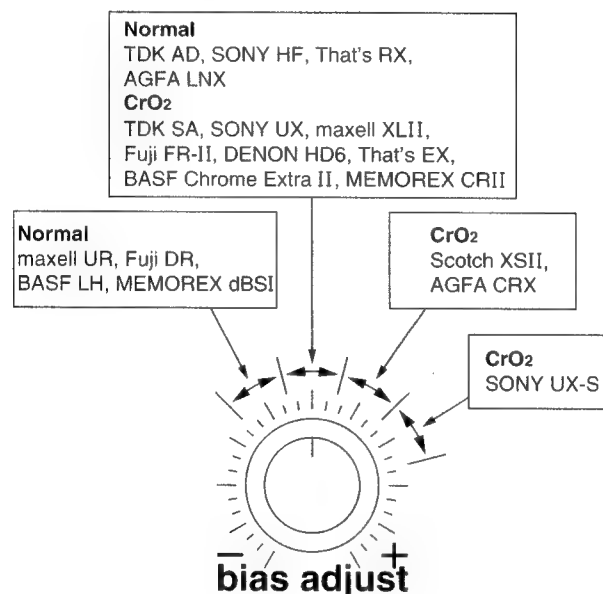Bias becomes shallower; the treble characteristic increases.

bias adjust

Bias becomes deeper; the treble characteristic decreases.

3 After repeating the above steps if necessary, rewind the tape and then begin the recording again.

Notes:
- When metal-coated tape is used, there is almost no difference of bias characteristics. Therefore the bias adjustment is not necessary.
- The bias readjustment is not needed as long as you continue to use the same type and brand of tape that was used when the adjustment was first made.

Refer to the diagram below when adjusting the bias to match a specific tape.

Normal
TDK AD, SONY HF, That's RX, AGFA LNX
CrO_2
TDK SA, SONY UX, maxell XLII, Fuji FR-II, DENON HD6, That's EX, BASF Chrome Extra II, MEMOREX CRII

Normal
maxell UR, Fuji DR, BASF LH, MEMOREX dBSI

CrO_2
Scotch XSII, AGFA CRX

CrO_2
SONY UX-S

bias adjust

Note:
The diagram shows recommended values based on representative tape characteristics. There is no guarantee that they will produce optimal results in all cases due to slight variations between individual cassettes and cassette decks.

MPX filter

Because the pilot signal* in the FM stereo broadcast signals is subjected to Dolby noise-reduction processing in the same way as the music signals when an FM stereo broadcast is being recorded. There will be deterioration of the tone quality, and the noise-reduction effect is reduced.

This unit, however, is provided with an MPX filter that filters out the pilot signal. Note that the MPX filter has no audible effect upon the tone quality.
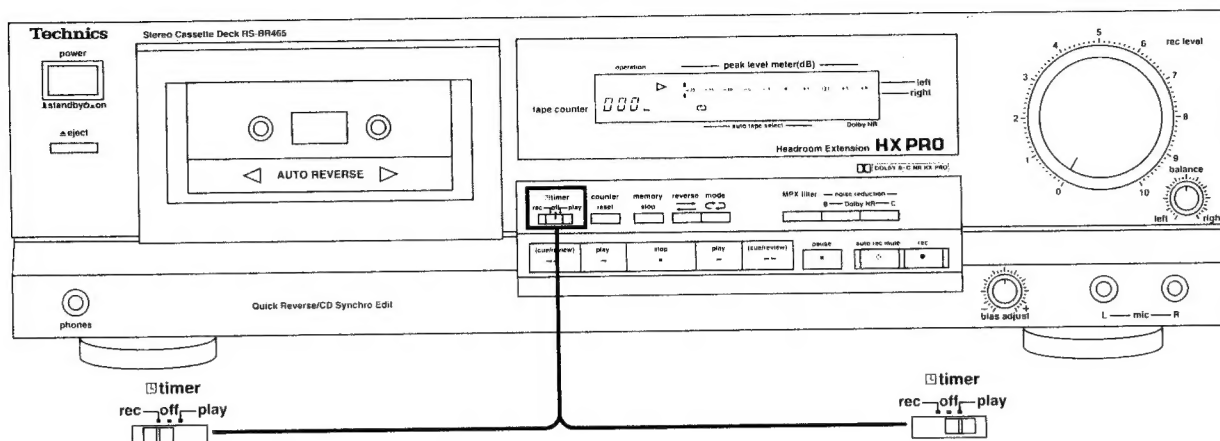
This switch is used during the recording of an FM stereo broadcast to prevent misoperation of the Dolby noise reduction.
This switch, however, should be switched OFF when a sound source other than the FM broadcast is being recorded.

*Pilot signal
The pilot signal is used to separate the FM stereo broadcast signals (left and right channels); this signal is generated on a 19 kHz frequency.

Timer Recording/Playback

If an audio timer (not included) is connected to this unit, recording of a radio broadcast, or tape playback, will automatically begin at the preset time. Timer recording or playback is also possible by using a tuner with a timer.

Connect the AC power cord of this unit to the power source outlet of the timer. (See the operating instructions of the timer for detailed information.)

Timer recording

1 Prepare for recording.
Follow steps 1 through 10 of "Recording" on page 11. After adjusting the recording level, press the stop button.

2 Set the timer to the desired recording-start time.
(Power "standby ⏻/on" switch will be "standby ⏻" position.)

3 Set the timer switch to the "rec" position.
(At the specified time, the power "standby ⏻/on" switch will come on and the audio source will be recorded.)

■ After setting the timer
Be sure that the power "standby ⏻/on" switch is set to the "on" position.

Timer playback

1 Rewind the tape to the position from which you want playback to begin.
(Refer to page 8.)

2 Set the timer to the desired playback-start time.
(Power "standby ⏻/on" switch will be "standby ⏻" position.)

3 Set the timer switch to the "play" position.
(At the specified time, the power "standby ⏻/on" switch will come on and the playback will begin.)

■ After setting the timer
Be sure that the power "standby ⏻/on" switch is set to the "on" position.

About Cassette Tapes

Selection of cassette tapes

Do not use the following types of tapes in this unit.

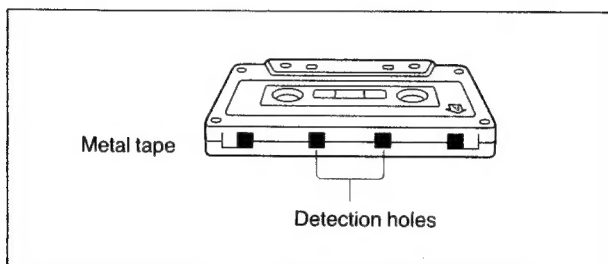● **Cassette tapes exceeding 90 minutes**
These tapes are handy for their long playback and recording time but be careful about repeatedly stopping and starting, rewinding and fast forwarding these tapes in short intervals as they are thin, tend to stretch and may become entangled in the machine.

● **Fe-Cr tapes (TYPE III)**
The high frequency range will be emphasized and it will not be possible to obtain a flat frequency response.
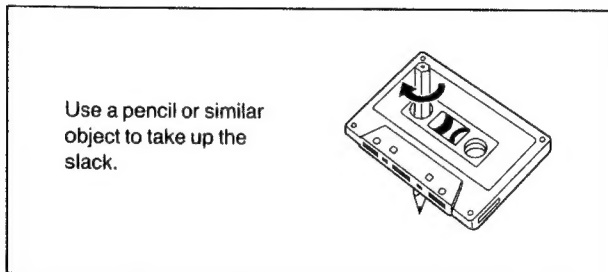
● **Metal tape without detection holes in the cassette**
Recordings will be very distorted. (There is no playback problem, however.)
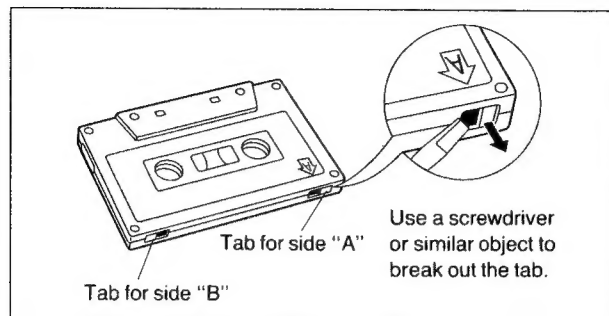
Metal tape

Detection holes

Tape slack

Tape slack may cause the tape to break.

Use a pencil or similar object to take up the slack.

To prevent erasure of recorded sounds

Remove the erase-prevention tabs (thus preventing recording).

Tab for side "A"
Tab for side "B"
Use a screwdriver or similar object to break out the tab.

■ **To re-record on a protected cassette**
Cover the slot with adhesive tape.

Attach tape.

Avoid tape storage in the following places

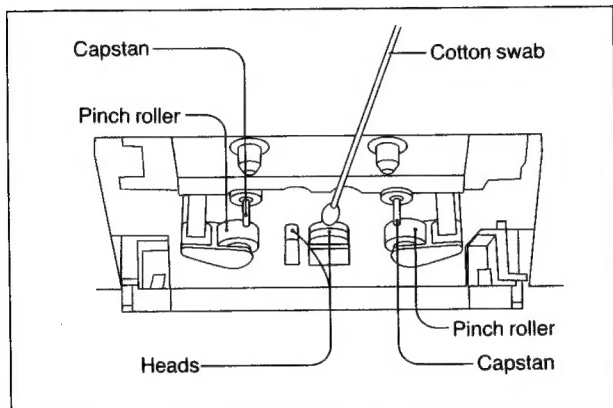Tape can be damaged if it is stored in places such as described below.
● Where the temperature is high (95°F/35°C or higher) or where the humidity is high (80% or higher).
● Where there is a strong magnetic field (near a speaker, on top of a TV, etc.). Recording may become erased.
● In direct sunlight.

Maintenance

Head care

To assure sound quality for recording and playback, be sure to clean the heads after approximately every 10 hours of use.
1) Press the power switch to switch off the electrical power supply of this unit.
2) Press the eject button to open the cassette holder.
3) Clean the heads, pinch roller and the capstan shaft with a cotton swab (or with a soft, lint-free cloth) slightly moistened with isopropyl alcohol.
   Do not use any solution other than alcohol for head cleaning.

Head demagnetization

In order to maintain good sound quality during recording and playback, it is recommended that the head assembly be demagnetized when distortion or poor sound quality persist after cleaning the heads.
If the head assembly becomes magnetized, it could create noise in the recordings, loss of high-frequency response or erasure of valuable recordings. Several types of head demagnetizers are available and may be purchased at local electronics supply stores.
Follow the instructions that are supplied with the device.
● Do not bring any type of metal objects or tools such as magnetic screwdrivers in contact with the head assembly.

Maintenance of external surfaces

To clean this unit, use a soft, dry cloth.
If the surfaces are extremely dirty, use a soft cloth, dipped into a soap-and-water solution or a weak detergent solution.
Wring the cloth well before wiping the unit.
Wipe once again with a soft, dry cloth.
Never use alcohol, paint thinner, benzine, nor a chemically treated cloth to clean this unit.
Such chemicals may damage the finish of your unit.

Technical Specifications

■ CASSETTE DECK SECTION

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Heads	
Rec/Play	Permalloy Head
Erasure	Double-gap ferrite Head
Motors	
Capstan drive	DC servo motor
Reel table drive	DC motor
Recording system	AC bias
Bias frequency	80 kHz
Erasing system	AC erase
Tape speed	4.8 cm/sec.
Frequency response	
NORMAL	30 Hz–15 kHz (±3 dB)
	30 Hz–15 kHz (DIN)
CrO₂	30 Hz–16 kHz (±3 dB)
	30 Hz–16 kHz (DIN)
METAL	30 Hz–17 kHz (±3 dB)
	30 Hz–17 kHz (DIN)

S/N (signal level=max recording level, CrO₂ type tape)

Dolby C NR on	74 dB (CCIR)
Dolby B NR on	66 dB (CCIR)
Dolby NR off	56 dB (A weighted)

Wow and flutter	0.07% (WRMS)
Fast forward and rewind times	
	Approx. 90 seconds with C-60 cassette tape
Input sensitivity and impedance	
MIC	0.25 mV/600Ω–10 kΩ
LINE IN	60 mV/47 kΩ
Output voltage and impedance	
LINE OUT	400 mV/800Ω
HEADPHONES	30 mV/8Ω
load impedance	(8Ω–600Ω)

■ GENERAL

Power consumption	
For Australia	16 W
For others	18 W
Power supply	
For Australia	AC 230–240 V, 50/60 Hz
For others	AC 110/127/220/240 V, 50/60 Hz
Dimensions (W×H×D)	430×125×290 mm
Weight	4.3 kg

Note:
Specifications are subject to change without notice.
Weight and dimensions are approximate.

Troubleshooting Guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation.

If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of Authorized Service Centers (enclosed with this unit) to locate a convenient service center, or consult your dealer for instructions.

Problem	Probable cause(s)	Suggested remedy
While using the tape deck		
Tape moves but no sound is heard.	The volume control of the amplifier is set to its minimum position.	●Adjust the volume control to the desired level.
	The input selector of the amplifier is not set to the "tape" position.	●Set to the "tape" positon.
	"LINE IN" and "LINE OUT" stereo connection cables have been connected in reverse.	●Connect them properly.
Distorted sound.	The recording level is too high.	●Select the appropriate recording level while recording.
Previously recorded sound has not been erased.	Erase head is dirty.	●Clean the head.
Sound output is hoarse or unsteady.	Heads are dirty.	●Clean the heads.
	Tape is damaged.	●Try operation with a new cassette; if there is no problem with the new cassette, discard the damaged cassette.
Poor sound quality (especially in the high treble and low bass ranges).	The correct Dolby noise-reduction button is not set.	●Set it to the correct position.
Sound is low, poor tone, intermittent sound, noise.	Heads, capstan and/or pinch roller are dirty or tape is damaged.	●Clean the heads, capstan and/or pinch roller, or try a new cassette.
Recording is not possible.	The recording level control is at the "0" position.	●Select the appropriate recording level.
	No safety tab on cassette tape.	●Block up the hole by adhering a piece of cellophane tape to the area where the safety tab was broken out.
High-pitched noise ("howling") is heard while a microphone is being used.	The microphone is being used too close to the speakers.	●Use the microphone farther away from the speakers or decrease the volume level.